

**REMARKS**

Claims 1, 2, 8, 9, 24, 25 and 27-32 are pending in this application. By this Amendment, the specification is amended to correct a typographical error. Additionally, claims 1 and 2 are amended to address the teachings of Pintilie and Vogel. Furthermore, claims 8-9 and 27-28 are amended for clarity. New claims 31-32 are added.

No new matter is added by this Amendment. The amendments to claims 1 and 2 are supported in the original specification, for example on page 9, lines 16-22. Claims 31-32 are supported in the original specification, for example on page 9, lines 23-27.

In view of the foregoing amendments and the following remarks, reconsideration of this application is respectfully requested.

**I. Rejections Under 35 U.S.C. §102(b)****A. Pintilie**

Claims 1-2 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Pintilie et al. "Enhancement of the Photoconductive Properties of PbS Films deposited on ferroelectric substrates", Material Science and Engineering, B44 (1997), pages 292-296 ("Pintilie"). This rejection is respectfully traversed.

Claim 1, as amended, recites a ferroelectric film that is described by a general formula  $(\text{Pb,A})(\text{B}_{1-x}\text{Nb}_x)\text{O}_3$  wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu, a B element comprises at least one of Zr, Ti, V, W, Hf and Ta, and x is within the range of  $0.05 \leq x \leq 0.4$ .

Claim 2, as amended, recites a ferroelectric film that is described by  $(\text{Pb}_{1-y}\text{A}_y)(\text{B}_{1-x}\text{Nb}_x)\text{O}_3$ , wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu, y is within the range of:  $0 < y \leq 0.2$ , a B element comprises at least one of Zr, Ti, V, W, Hf and Ta, and x is within the range of:  $0.05 \leq x \leq 0.4$ .

Pintilie teaches a ferroelectric substrate having a composition formula of  $\text{Pb}_{0.98}\text{La}_{0.02}(\text{Zr}_{0.585}\text{Ti}_{0.315}\text{Nb}_{0.1})\text{O}_3$ . Pintilie also teaches a ferroelectric substrate having a composition formula of  $\text{Pb}_{0.98}\text{Bi}_{0.02}(\text{Zr}_{0.5}\text{Ti}_{0.31}\text{Fe}_{0.1}\text{Nb}_{0.08}\text{U}_{0.01})\text{O}_3$ . See Pintilie, second column on page 292.

Nowhere does Pintilie teach or suggest a ferroelectric film having a composition formula of  $(\text{Pb},\text{A})(\text{B}_{1-x}\text{Nb}_x)\text{O}_3$  wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu as recited in claim 1. In fact, from the composition formula as disclosed by Pintilie, it is clear that Pintilie requires the presence of Pb and La or the presence of Pb and Bi. Claim 1, as amended, however, does not include either La or Bi as the A element. Therefore, the ferroelectric film as recited in claim 1 distinguishes over Pintilie, which requires the presence of either La or Bi.

Furthermore, nowhere does Pintilie teach or suggest a ferroelectric film as recited in claim 2. As discussed above, Pintilie requires the presence of Pb and La or the presence of Pb and Bi. Claim 2, as amended, however, requires that the A element be an element that does not include either La or Bi. As such, Pintilie does not teach or suggest a ferroelectric film having a composition formula of  $(\text{Pb}_{1-y}\text{A}_y)(\text{B}_{1-x}\text{Nb}_x)\text{O}_3$ , wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu as recited in claim 2. Thus, the ferroelectric film as recited in claim 2 distinguishes over Pintilie.

For the foregoing reasons, Applicants respectfully submit that Pintilie fails to anticipate the subject matter of claims 1 and 2. Reconsideration and withdrawal of this rejection are respectfully requested.

**B. Vogel**

Claims 1-2 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 3,681,226 ("Vogel"). This rejection is respectfully traversed.

Vogel teaches a method of making a sputtering target for depositing a ferroelectric film having a preferred composition of  $\text{Pb}_{0.92}\text{Bi}_{0.07}\text{La}_{0.01}[\text{Fe}_{0.405}\text{Nb}_{0.325}\text{Zr}_{0.27}]\text{O}_3$ . See Vogel, column 3, line 55.

Nowhere does Vogel teach or suggest a ferroelectric film having a composition formula of  $(\text{Pb,A})(\text{B}_{1-x}\text{Nb}_x)\text{O}_3$  wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu as recited in claim 1. In fact, Vogel requires both Bi and La, neither of which is present in the claimed ferroelectric film, wherein A is an element that excludes Bi and La. Therefore, the ferroelectric film as recited in claim 1 distinguishes over Pintilie.

Furthermore, nowhere does Vogel teach or suggest a ferroelectric film as recited in claim 2. As discussed above, Vogel requires both Bi and La and further requires a relationship between Pb, Bi and La to be  $\text{Pb}_{0.92}\text{Bi}_{0.07}\text{La}_{0.02}$ . Claim 2, as amended, however, requires neither Bi nor La for the A element in a relationship of  $\text{Pb}_{1-y}\text{A}_y$ . In fact, the A element as recited in claim 2 excludes Bi and La. Thus, the ferroelectric film as recited in claim 2 distinguishes over Vogel.

For the foregoing reasons, Applicants respectfully submit that Vogel fails to anticipate the subject matter of claims 1 and 2. Reconsideration and withdrawal of this rejection are respectfully requested.

**II. Rejections Under 35 U.S.C. §103(a)**

**A. Ramesh in view of Vogel**

Claims 1-2, 24-25 and 29-30 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Pub. No. 2002/0009612 ("Ramesh") in view of Vogel. This rejection is respectfully traversed.

The Patent Office alleged that Ramesh teaches a perovskite heterostructure having a monocrystalline layer of  $\text{Pb}(\text{Mg,Nb})\text{O}_3\text{-PbTiO}_3$  for use in piezoelectric actuators and ferroelectric memory cells. As admitted by the Patent Office, Ramesh does not teach or suggest the ferroelectric film as recited in claims 1 and 2. However, the Patent Office relied on Vogel as allegedly teaching a ferroelectric film that could have been used in the Ramesh devices. However, even if Vogel were to have been combined with Ramesh as alleged by the Patent Office, the presently claimed subject matter still would not have been achieved because Vogel does not remedy the deficiencies of Ramesh. Specifically, Vogel also does not teach or suggest "a ferroelectric film ... wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu ..." as recited in claims 1 and 2.

For the foregoing reasons, Applicants respectfully submit that Ramesh and Vogel, alone or in combination, would not have led one of ordinary skill in the art to claims 1-2, 24-25 and 29-30.

Reconsideration and withdrawal of this rejection are respectfully requested.

**B. Adachi in view of Vogel**

Claims 1-2, 24-25 and 29-30 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,579,258 ("Adachi") in view of Vogel. This rejection is respectfully traversed.

Adachi teaches a nondestructive readout ferroelectric memory having a small capacitance when a high-frequency voltage is applied and using a nonlinear resistance layer which stabilizes a threshold voltage and a nonlinear coefficient. See Adachi, column 2, line 64 to column 3, line 2. As admitted by the Patent Office, Adachi fails to teach or suggest the ferroelectric film as recited in claims 1 and 2. However, the Patent Office relied on Vogel as allegedly teaching a ferroelectric film that could have been used in the Adachi device. However, even if Vogel were to have been combined with Adachi as alleged by the Patent Office, the presently claimed subject matter still would not have been achieved because Vogel does not remedy the deficiencies of Adachi. Specifically, Vogel also does not teach or suggest "a ferroelectric film ... wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu ..." as recited in claims 1 and 2.

For the foregoing reasons, Applicants respectfully submit that Adachi and Vogel, alone or in combination, would not have led one of ordinary skill in the art to claims 1-2, 24-25 and 29-30.

Reconsideration and withdrawal of this rejection are respectfully requested.

**C. Vogel in view of Hase**

Claims 8-9 and 27-28 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Vogel, as applied to claims 1-2 above, and further in view of U.S. Patent No. 5,279,996 ("Hase"). This rejection is respectfully traversed.

Vogel does not teach or suggest the ferroelectric film as recited in claims 1-2 and does not teach or suggest the ferroelectric film further comprising Si, Ge or Si and Ge as recited in claims 8-9. The Patent Office relied on Hase as allegedly teaching adding at least one of Si and Ge to a ferroelectric composition to improve the mechanical strength of the composition. However, even if Hase were to have been combined with Vogel as alleged by the Patent

Office, the presently claimed subject matter still would not have been achieved because Hase does not remedy the deficiencies of Vogel. Specifically, Hase also does not teach or suggest "a ferroelectric film ... wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu ..." as recited in claims 1 and 2.

For the foregoing reasons, Applicants respectfully submit that Vogel and Hase, alone or in combination, would not have led one of ordinary skill in the art to claims 8-9 and 27-28. Reconsideration and withdrawal of this rejection are respectfully requested.

**D. Pintilie in view of Hase**

Claims 8-9 and 27-28 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Pintilie, as applied to claims 1-2 above, and further in view of Hase. This rejection is respectfully traversed.

Pintilie does not teach or suggest the ferroelectric film as recited in claims 1-2 and does not teach or suggest the ferroelectric film further comprising Si, Ge or Si and Ge as recited in claims 8-9. The Patent Office relied on Hase as allegedly teaching adding at least one of Si and Ge to a ferroelectric composition to improve the mechanical strength of the composition. However, even if Hase were to have been combined with Pintilie as alleged by the Patent Office, the presently claimed subject matter still would not have been achieved because Hase does not remedy the deficiencies of Pintilie. Specifically, Hase also does not teach or suggest "a ferroelectric film ... wherein an A element consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu ..." as recited in claims 1 and 2.

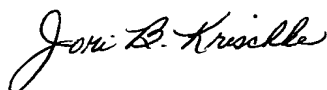
For the foregoing reasons, Applicants respectfully submit that Pintilie and Hase, alone or in combination, would not have led one of ordinary skill in the art to claims 8-9 and 27-28. Reconsideration and withdrawal of this rejection are respectfully requested.

**III. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2, 8, 9, 24, 25 and 27-32 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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